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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,771	02/28/2005	You-In Kim	0011.1002	9952
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STEIN, MCEWEN & BUI, LLP 1400 EYE STREET, NW SUITE 300 WASHINGTON, DC 20005			MALLARI, PATRICIA C	
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			3735	

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Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/525,771	<b>Applicant(s)</b> KIM, YOU-IN	
	<b>Examiner</b> Patricia C. Mallari	<b>Art Unit</b> 3736	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

The Office action filed 4/7/06 was missing a section of the rejection of claims 1, 2, and 5 under 35 U.S.C. 103(a). This Office action contains the missing portion of the rejection.

#### ***Drawings***

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "22" has been used to designate both a low pass filter (p. 13, line 12 of the specification) and an amplifier (p. 12, lines 16-17 of the specification). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Claim Objections***

Claims 1, 4, 7, and 9 are objected to because of the following informalities:

On line 15 of claim 1, "operate" should be replaced with "determine"

On line 17 of claim 1, "operated at" should be replaced with "determined by"

On line 4 of claim 4, "inputted a" should be replaced with "inputted into a"

On line 5 of claim 4, "provide" should be replaced with "provided"

On line 7 of claim 7, "from" should be replaced with "for"

On line 10 of claim 9, "operate" should be replaced with "determine".

On line 11 of claim 9, "operated in the operating step" should be replaced with "determined in the comparing step".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 9-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 9 recites, "converting AC signals of the pulse wave and the electrocardiogram into DC signals after the amplifying and filtering steps". However, the application fails to set forth clearly how such conversion occurs. The applicant's specification teaches using an A/D converter to transform AC to DC, but and A/D

converter transforms analog signals into digital signals, not alternating current (AC) into direct current (DC). It appears that the applicant may have instead intended to claim "converting analog signals of the pulse wave and the electrocardiogram into digital signals after the amplifying and filtering steps" (see claims 1-8 and the rejection under 35 U.S.C. 112, 2<sup>nd</sup> paragraph set forth below).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "an electrocardiogram monitor for measuring a systolic blood pressure and a diastolic blood pressure" on lines 6-7. However, it appears from the applicant's specification that the electrocardiogram monitor obtains electrical signals representative of the subject's ECG, rather than measuring a systolic blood pressure and a diastolic blood pressure, as claimed (see figs. 3 & 10; p. 9, lines 8-25 of the instant specification), wherein the controlling section measuring a systolic blood pressure and a diastolic blood pressure from the measured ECG signal and the pulse wave signal. For the purpose of this examination only, the examiner assumes that such a meaning is intended in the claim. If such is the case, on lines 6-8 of claim 1, "for measuring a systolic blood pressure and a diastolic blood pressure" should be deleted. On lines 15-1 of claim 1, "to operate the blood pressure of the subject" should be

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replaced with "to determine a systolic blood pressure and a diastolic blood pressure of the subject". Similar amendments to the specification should be made where the "ECG monitor" is described as measuring diastolic or systolic blood pressure. If this is an inaccurate description of the applicant's intent, the applicant should amend the claim accordingly, noting that the specification lacks fails to describe, in detail, an ECG monitor that does "measure a systolic blood pressure and a diastolic blood pressure" as claimed.

Furthermore, lines 11-13 of claim 1 recite, "an A/D converting section for converting the AC signal, which are applied from both the pulse wave signal processing section and the electrocardiogram signal processing section, into DC signals". An "A/D" converter refers to a device that converts analog signals into digital signals, not one that converts alternating current (AC) into direct current (DC). It is unclear from the claim language whether the applicant intended to claim an A/D converter or an AC to DC adapter. For the purpose of this examination only, it is assumed that the applicant intended to claim an A/D converting section for converting analog signals into digital signals, particularly because there appears to be no reason for AC to DC conversion nor is any means described for such conversion, whereas analog to digital conversion is common in medical devices. In any case, whether the applicant intended to claim an A/D converter or an AC to DC adapter, the applicant should amend the claim and the specification to reflect clearly the intended meaning. If the limitation should indeed be an AC to DC adapter, the applicant should refer to the rejection under 35 U.S.C. 112, 1<sup>st</sup>

paragraph set forth above with regard to AC to DC conversion of pulse wave and electrocardiogram signals.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected as being unpatentable over US Patent No. 5,873,834 to Yanagi et al. in view of US Patent No. 5,735,799 to Baba et al. Yanagi teaches an automatic blood pressure measuring instrument for measuring and displaying a blood pressure of a subject. The instrument comprises a sensor 27 for obtaining a pulse wave from a wrist of the subject and a pulse wave processing section 28, 29 for amplifying, filtering, and noise-removing the pulse wave applied from the pressure sensor 27. An electrocardiogram monitor 21, 22 measures an ECG signal and converting the measured results into electrical signals, and an electrocardiogram signal processing section 23-25 amplifies, filters, and noise-removes the converted ECG measurement signals applied from the electrocardiogram monitor. An A/D converting section 26, 30 converts analog signals applied from the pulse wave signal processing section and the ECG signal processing section into digital signals. A controlling section 31 for compares and analyzes the pulse wave signal and the ECG signals applied through the A/D converting section to determine the blood pressure of the subject, and

a display 33 for displaying the blood pressure of the subject operated at the controlling section (fig. 1; col. 2, line 36-col. 3, line 9; col. 3, line 66-col. 4, line 63; col. 5, line 24-32 of Yanagi). Yanagi is silent as to the type of sensor used as the pulse wave sensor.

However, Baba teaches an automatic blood pressure measuring instrument comprising a pulse wave sensor, wherein the pulse wave sensor may be a pressure sensor (col. 3, lines 60-63 of Baba). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the pulse wave sensor of Baba as that of Yanagi, since Yanagi teaches using a pulse wave sensor, and Baba teaches a pressure sensor as an appropriate such pulse wave sensor.

Regarding claim 2, the instrument further comprises a program storing section for storing an operation program of the controlling section, and a data storing section for storing the pulse wave signal and the ECG signals applied from the A/D converting section for a predetermined time and for storing operation data operated at the controlling section, wherein, since the CPU 31 automatically implements the procedures disclosed, the instrument must inherently include the operation program for executing the procedures in some program storing section and wherein, additionally, in order to manipulate received signals to determine blood pressure as disclosed, the instrument must further store the received signals and operation data in some section, at least temporarily (col. 1, lines 36-45 of Yanagi). Alternatively, the applicants should note that the language "for storing an operation program of the controlling section" and "for storing the pulse wave signal and the electrocardiogram signals applied from the A/D converting section for a predetermined time and storing operation data operated at the

controlling section" are merely "intended use" language, which cannot be relied upon to define over the prior art, since Yanagi, as modified, teaches all of the claimed structural limitations and their recited relationships. The memory 6 is clearly capable of storing the recited information.

Regarding claim 5, the ECG signals processing section comprises an amplifying section 25 and filtering section 24 (fig. 1 of Yanagi).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi in view of Baba, as applied to claims 1, 2, and 5 above, and further in view of US Patent No. 4,442,845 to Stephens and US Patent No. 3,903,873 to Royal. Yanagi, as modified, teaches an amplifying means but fails to describe the filter and amplifier in detail. However, Stephens teaches processing a pulse wave signal using notch filter to eliminate noise of a commercial (60 Hz) frequency from the signal (col. 3, lines 1-7 of Stephens). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use a notch filter as the filter of Yanagi, as modified by Baba, since the combined references teach using a filter, and Stephens describes a notch filter as an appropriate such filter. Yanagi, as modified by Baba and Stephens still lacks details as to the amplifier.

However, Royal teaches a pulse wave sensor, wherein the pulse wave signal is processed using an amplifier, the amplifier being a differential amplifier that also acts as an impedance matching means for matching impedances of the inputted pulse wave and the output signal (col. 4, lines 18-59 of Royal). Therefore, it would have been

obvious to one of ordinary skill in the art at the time of invention to use the amplifier of Royal as that of Yanagi, in view of Baba and Stephens, since the combined references teach using an amplifier, and Royal discloses an appropriate such amplifier.

As to the order of the impedance matching means, amplifying means, and notch filter, the applicant has not disclosed that the particular order of connection of these elements provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the applicant's invention to perform equally well with any order of these three elements, because the ability to determine blood pressure is not affected by their order. Accordingly, the use of a particular order of these elements is deemed to be a mere design consideration which fails to patentably distinguish over the prior art of Yanagi, as modified above.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagi in view of Baba, as applied to claims 1, 2, and 5 above, and further in view of US Patent No. 4,742,831 to Silvian. Yanagi, as modified teaches a filtering section to filter the amplified signal (fig. 1 of Yanagi) but fails to describe the filtering section and amplifier in detail. However, Silvian teaches circuitry for processing an EKG signal comprising a low pass filter 23 which may include a switchable notch filter to removed commercial frequency noise and amplifiers U5-U8 which also operate as an impedance matching means for matching an impedance of the input and output signals (figs. 3 and 5; col. 7, lines 18-28; col. 8, lines 45-56 of Silvian). Therefore, it would have been obvious to

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one of ordinary skill in the art at the time of invention to use the filtering section and amplifier of Silvian as that of Yanagi, in view of Baba, since the combined references teach using an amplifier and filtering section to process received EKG signals and Silvian describes appropriate such amplifier and filtering, and further to assure a high common mode rejection and to improve the quality of the EKG measurement.

As to the order of the impedance matching means, low pass filter, and notch filter, the applicant has not disclosed that the particular order of connection of these elements provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected the applicant's invention to perform equally well with any order of these three elements, because the ability to determine blood pressure is not affected by their order. Accordingly, the use of a particular order of these elements is deemed to be a mere design consideration which fails to patentably distinguish over the prior art of Yanagi, as modified above.

#### ***Allowable Subject Matter***

Claims 4, 7, and 8 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 4, the prior art of record fails to teach or fairly suggest an automatic blood pressure measuring instrument wherein the first notch filter comprises the combination of an operational amplifier for amplifying the signals amplified at the pulse wave signal amplifying means and inputted into a non-inverting terminal thereof, a low pass filter provided on a loop fed from an output terminal of the operational amplifier back to an inverting terminal and for removing noise of the commercial frequency, a first variable resistor connected in parallel with the non-inverting terminal of the operational amplifier, and a second variable resistor connected in parallel with the low pass filter, in combination with all of the other limitations of the claim. Yanagi, as modified by Baba, Stephen, and Royal, and described above teach an automatic blood pressure measuring instrument as claimed except that the details of the notch filter are not shown. US Patent No. 5,027,824 to Dougherty et al. teaches a notch filter comprising a low pass filter, operational amplifier, and two variable resistors (fig. 4; col. 11, line 54- col. 12, line 32 of Dougherty), but the relationship of these elements is not as claimed in claim 4. Therefore, even though it would have been obvious to use the notch filter of Dougherty as that of Yanagi, as modified by Baba, Stephens, and Royal, the combined references would still fail to describe an automatic blood pressure measuring instrument comprising a notch filter as claimed.

Regarding claims 7 and 8, the prior art of record fails to teach or fairly suggest an automatic blood pressure measuring instrument wherein the amplifying section comprises a first differential amplifier including a first gain adjusting means for adjusting a gain of EKG signals measured from one side of a body of the subject, a second low-

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pass filter for removing a low band noise from the signals applied from the first gain adjusting means, and a first EKG amplifying means for amplifying signals filtered at the second low-pass filter; a second differential amplifier including a second gain adjusting means for adjusting a gain of EKG signals measured from the other side of the body of the subject, a third low-pass filter for removing a low band noise from the adjusting signals applied from the second gain adjusting means, and a second EKG amplifying means for amplifying the signals filtered at the third low-pass filter; and a second impedance matching means for matching an impedance with the filtering section when the amplifying signals of the first and second differential amplifiers are applied, in combination with all of the other limitations of the claims. Yanagi, as modified by Baba and Silvian above, teaches an amplifying section wherein EKG signals from each side of the body are amplified by separate differential amplifiers, which also act as impedance matching means (figs. 3 & 5 of Silvian). However, the combined references fail to teach each of the differential amplifiers comprising a gain adjusting means and a low pass filter. Furthermore, while Yanagi, as modified teaches low pass filtering the EKG signals, the low pass filter is external to the differential amplifier and is applied to the combined EKG signals rather than to each set of signals, as claimed.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patricia C. Mallari whose telephone number is (571)


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272-4729. The examiner can normally be reached on Monday-Friday 10:00 am-6:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Max Hindenburg can be reached on (571) 272-4726. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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